

Remarks

Claims 2-6 and 9-18 are pending.

Claim 17 has been amended to clarify that the distance between the *upper* guide rollers is adjustable.

New Claim 18 defines the device as set forth and supported in Claims 4 and 17, whereby the distance between the upper guide rollers is *adjustable* to vary the width of the filling gap therebetween – *and* the upper and lower guide rollers are *aligned axially parallel to one another*. (Thus, it is noted that in this embodiment, the lower guide rollers would also be adjustable so as to be aligned axially parallel with the adjustable upper guide rollers and to provide the cooling belts in a parallel arrangement as required by the claim.) Additional support for Claim 18 is in the published application US2007/0098861, for example, at paragraphs [0011], [0024], [0025] and [0026].

No new matter has been added by the amendment to Claim 17 or addition of Claim 18, which are intended merely to clarify language used in the claims and/or the subject matter claimed. The scope of the claims is intended to be the same after the amendment as it was before the amendment.

Rejection of Claims under 35 U.S.C. §103(a)

The Examiner rejected Claims 2-6, 8-15 and 17 under Section 103(a) as obvious over Fujii (US 2002/0027309) in view of Harrington (US 6,581,675). This rejection is respectfully traversed.

The Examiner acknowledges that Fujii fails to teach that the distance between the guide rollers is adjustable, but argues that it would be obvious to modify Fujii's apparatus illustrated in Fig. 2 (below) in view of Harrington's disclosure at col. 5, lines 1-10 to provide adjustable rollers 15, 17 to change the desired thickness of a metal strip.

Fujii discloses an apparatus constructed for cooling a finished thermoplastic resin sheet in order to increase transparency of the resin sheet.

The Examiner argues that the upper guide rollers 21, 24 of Fujii (Fig. 2) "form a filling gap for material 11" citing to paragraph [0077]. The Examiner is mistaken.

As defined in Claim 17, the "filling gap" is situated between the upper guide rollers and its width can be varied by adjusting the distance (gap) between the upper guide rollers.

As illustrated in Fig 2 below, paragraph [0077] addresses the T-die 12 and configuration of the belts 23, 26, the cooling rollers 21, 22 and 24, 25 and pairs of rollers 28, 29.

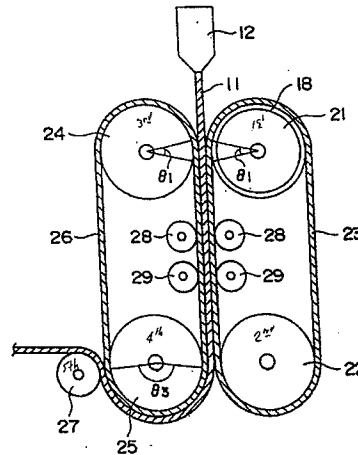


FIG. 2

[0077] The producing apparatus is composed of the T-die 12 of an extruder, a first metallic endless belt 23 wound on a first cooling roller 21 and a second cooling roller 22, a second metallic endless belt 26 wound on a third cooling roller 24 and a fourth cooling roller 25, a fifth roller 27 provided adjacent to the fourth cooling roller 25, and two pairs of rollers 28 and 29 provided as an added-pressure means to the endless belts 23 and 26.

Fujii's apparatus is composed of a T-die 12 of an extruder whereby a formed resin sheet that is *extruded from the T-die* is guided between two metallic endless belts 23, 26 on opposing cooling rollers 21, 24 to be cooled and touch-rolled to increase gloss and transparency of the resin sheet.

The resin sheet 11 is not flowable.

Fujii particularly defines the "molten thermoplastic resin sheet" as "after being formed" and as a "film-state" resin – which can be a single layer or multiple layers. See at paragraphs [0015], [0016] and [0020] (emphasis added).

[0015] The aforementioned molten thermoplastic resin sheet is *a thermoplastic resin sheet just after being formed by being extruded from an extruder.*

[0016] The molten thermoplastic resin sheet in the present invention should be recognized as to also mean a film-state molten thermoplastic resin, too.

...

[0020] And the sheet may be a single layer of thermoplastic resin or multi-layers including a layer of thermoplastic resin.

The resin material 11 extruded from the T-die 12 is *already formed* as a sheet when it contacts the belts 23, 26 on upper guide rollers 21, 24.

And, the belts 23, 26 and the upper guide rollers 21, 24 of Fujii's apparatus are not configured to perform any shaping of a material. The gap between the belts 23, 26 effects no shaping of the formed resin sheet material 11.

Rather, the endless metallic belts 23, 26 between the upper guide rollers 21, 24 are configured to touch roll the formed resin sheet 11 (to improve the transparency of the formed resin sheet). Any pressure provided by the rollers 21, 24 is merely to hold the formed resin sheet 11 pressed against the metallic endless belts 23, 26. In fact, the cooling roller 21 includes an "elastic member" 18 which becomes *elastically deformed* (e.g., softens) in the section between the rollers (in the area of angle $\theta 1$) where the resin sheet 11 is touch-rolled on the face of the rollers 21, 24.

Fujii's disclosure relates solely to improving the optical appearance (gloss, transparency) of the formed resin sheet – not to shaping a material. See at [0013] and at [0022] and [0088] below (emphasis added)

[0022] By guiding the molten thermoplastic resin sheet into the area between the first and third cooling rollers to touch the metallic endless belt, touching the first cooling roller, and the third cooling roller at approximately the same time, the molten thermoplastic resin sheet can be touch-rolled and cooled at the same time, resulting in the improved transparency of the thermoplastic resin sheet. ...

[0088] According to the embodiment, by touch-rolling the face and cooling the sheet 11 with both of the rollers 21 and 24 and the endless belts 23 and 26 in the area of the angle $\theta 1$ of the first roller 21, on which the elastic member 18 is elastically deformed, and the third roller 24, by touch-rolling the face and cooling the sheet 11 between the two pairs of rollers 28 and 29 as the adding-pressure means, and by touch-rolling the face and cooling the sheet 11 by the second metallic endless belt 26 and the fourth cooling roller 25 in the area of the angle $\theta 3$, the high-transparent polypropylene resin sheet 11 can be produced at a high-speed.

Other than the T-die of the extruder, Fujii provides no teaching of shaping a flowable material.

However, the Examiner argues that it would be obvious to modify Fujii as in Applicant's device in view of Harrington's disclosure that rollers 15, 17 can be adjusted to change the thickness of a metal strip.

First of all, there is no motivation to modify Fujii's apparatus as proposed by the Examiner to alter the upper rollers 21, 24 to be adjustable to alter the gap between the rollers. The resin sheet 11 of Fujii is already in its final shape when touching the belts 23, 26 over the upper guide rollers 21, 24. Therefore, there is no need to adjust the width of the gap between

the belts 23, 26 since such an adjustment would have no effect on the thickness of the formed resin sheet 11. In particular, where the gap between the belts 23, 26 would be increased – there would be *no resulting change* to the thickness of the extruded sheet 11. Rather, the already formed resin sheet 11 *would be without sufficient guidance* between the belts 21, 24 at the upper guide rollers 21, 24.

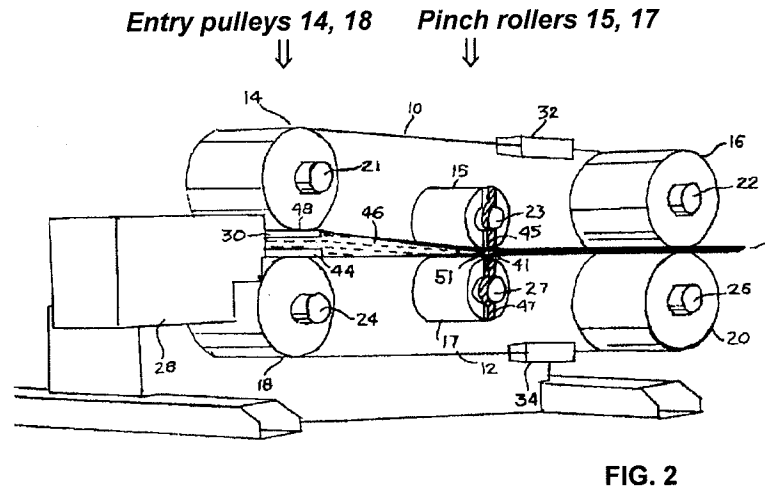
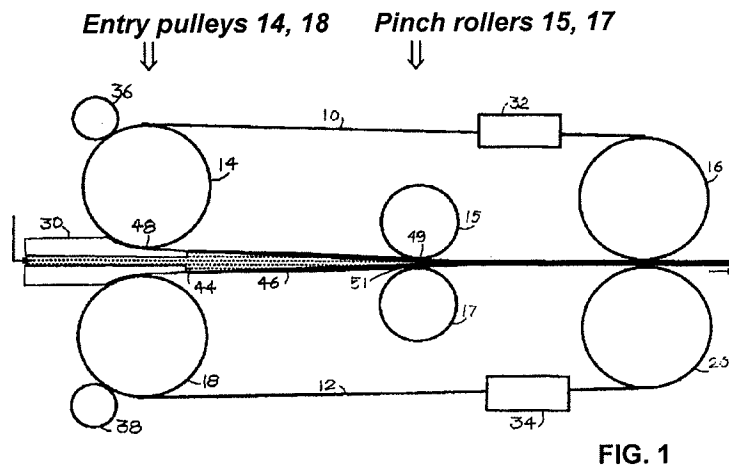
Moreover, Fujii's apparatus is already constructed with a T-die for extruding a formed sheet from an extruder. Consequently, Fujii's apparatus does not require an adjustable filling gap for receiving and shaping a flowable material.

Therefore, based on Fujii's disclosure, it would not be reasonable to vary the gap between the continuous belts 23, 26 at upper guide rollers 21, 24 of Fujii's apparatus as proposed by the Examiner, since there is no technical reason or advantage that would result from such a modification.

Furthermore, Harrington does not teach adjustment of the gap between the entry pulleys 14, 18.

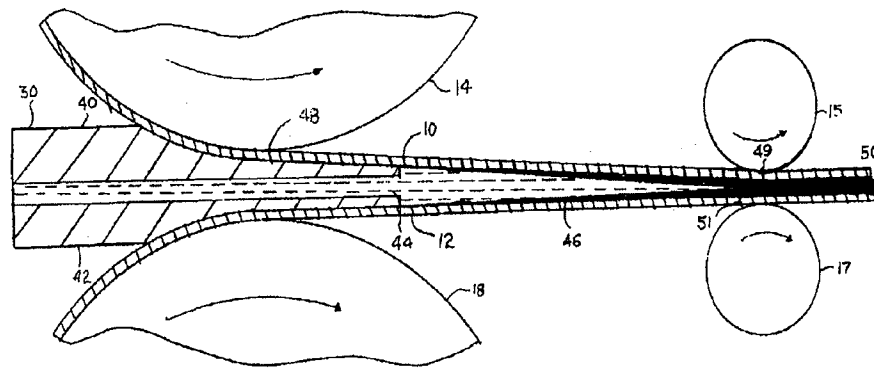
Harrington discloses an apparatus for strip casting of metals composed of a pair of horizontal endless belt that extend over a pair of entry pulleys 14, 18 and a pair of exit pulleys 16, 20. The belts 10, 12 define a molding zone 46 that tapers from the entry pulleys 14, 18 to the nip of a pair of pinch rollers 15, 17 situated midway between the entry and exit pulleys. Harrington teaches delivering a molten metal through a casting nozzle 30 as a horizontal stream to fill the molding zone 46 between the belts 10, 12 past the nip of the entry pulleys 14, 18. The *pinch rollers 15, 17* are moveable to adjust the gap 49 and thus the thickness of the cast metal as it passes between the pinch rollers 15, 17.

See Figs. 1-2 below.



Harrington does not teach adjustment of the gap between the entry pulleys 14, 18. In fact, Harrington specifically teaches that the gap 48 between the entry pulleys 14, 18 remains fixed to maintain a good fit with nozzle 42. See Fig. 3, and col. 5, lines 60-62 (emphasis added).

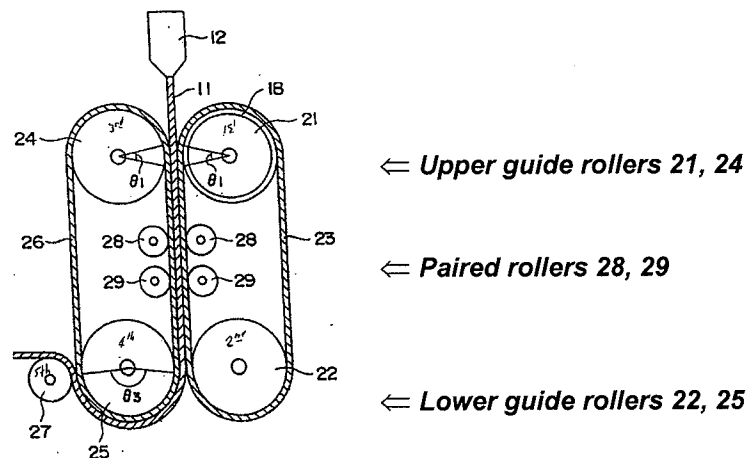
FIG. 3



...The gap 48 between entry pulleys 14 and 18 remains fixed to maintain a good fit with nozzle 42 while the pinch roll gap 49 is adjusted. ...

Instead, Harrington teaches placement of adjustable pinch rollers 15, 17 in a central position between the entry pulleys 14, 18 and the exit pulleys 16, 20.

The location of the pinch rollers 15, 17 in Harrington's apparatus is similar to the location of the paired rollers 28, 29 in Fujii's apparatus, which are likewise located midway between the upper guide rollers 21, 24 and the lower guide rollers 22, 25. See Fig. 5 of Fujii below.



Fujii
Fig. 5

Based on Harrington's disclosure, one skilled in the art would not modify Fujii as proposed by the Examiner to make the upper guide rollers 21, 24 of Fujii moveable to adjust the gap between the upper guide rollers.

Rather, a skilled art worker reading Harrington's disclosure would modify Fujii to a) maintain the upper guide rollers 21, 24 *at a fixed position* to form a tapered molding zone (i.e., section 46 as taught by Harrington) for receiving a flowable material (from a nozzle 42) into the molding zone, and b) make the *centrally located* paired rollers 28, 29 of Fujii to be adjustable to alter the gap between the rollers 28, 29.

However, that modification of Fujii would not achieve Applicant's apparatus as claimed.

Applicant's device is constructed such that the upper rollers function in the manner of a calibrating device so as to alter the width of the filling gap and thus, adjust the thickness of a food material as it passes through the filling gap.

Applicant's device as defined in Claim 17 requires:

a) upper guide rollers arranged to form a filling gap therebetween for receiving *and shaping* a flowable melted food material therein *in the manner of a calibrating device* into said strip of flowable melted food material having a thickness for passage between the cooling belts;

b) with the distance between the upper guide rollers being adjustable to vary the width of the filling gap to adjust the thickness of the strip of flowable melted food material.

Neither Fujii nor Harrington disclose upper guide rollers so arranged with the distance between the upper guide rollers being adjustable as required by the claims.

Nor would one skilled in the art modify Fujii as proposed in view of the fact that Fujii already incorporates a T-die of an extruder to form and shape a sheet material and such a modification would thus have no purpose in Fujii's apparatus—which is structured to improve transparency and gloss of a formed resin sheet.

Clearly, the Examiner has failed to establish a *prima facie* case of obviousness based on the combination of Fujii with Harrington.

Nor do the combined disclosures of Fujii with Harrington teach or suggest Applicant's device as set forth in either Claim 4 or new Claim 18. As defined in those claims, the device is composed of a) upper guide rollers that are *adjustable* to vary the width of the filling gap therebetween – and b) the upper and lower guide rollers are *aligned axially parallel to one another*. As such, the lower guide rollers would likewise be adjustable in

order to maintain the adjustable upper guide rollers and the lower guide rollers "aligned axially parallel" *and* the cooling belts "arranged parallel" as required by those claims.

Fujii combined with Harrington does not teach or suggest Applicant's device as claimed. Accordingly, the Examiner is respectfully requested to reconsider and then withdraw this rejection of the claims.

Extension of Term.

The proceedings herein are for a patent application and the provisions of 37 CFR § 1.136 apply. Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that Applicant has inadvertently overlooked the need for a petition for extension of time. If any extension and/or fee are required, please charge Account No. 23-2053.

It is submitted that the present claims are in condition for allowance, and notification to that effect is respectfully requested.

Respectfully submitted,



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